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EDITOR'S PICK TOPICAL TOP STORY

Anaconda's slag expected to bring a few jobs to Butte this week, many to Anaconda next year

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The future site of Premier Industries' slag processing is pictured with a backdrop that shows the Washoe background are a portion of the 56-million-ton slag heap that the company hopes to turn in proppant, pic
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A pilot project testing a proprietary process developed by a Montana Tech professor to turn Anaconda's giant slag piles into a product useful in the fracking industry starts operations in Butte this week.

The project, at JK Fabrication and Supply, 100 N. Parkmont, will employ 10 people and will test transforming slag into proppant, which is injected into fissures in underground rock. The proppant then holds the cracks open, allowing the natural gas and oil to reach the surface.

Site preparation work continues at Anaconda slag processing plant

Site preparation work continues at the future site of Premier Industries' slag processing plant, located along Mill Creek Highway, southeast of Anaconda.

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Montana Tech professor Courtney Young, Rick Tabish, Dan Tabish, and Lane McNamara hold the patent.

The company behind the process is Missoula-based Premier Industries LLC, whose backers were awarded a lease agreement with Anaconda-Deer Lodge County last year that will allow them to purchase 93 acres of land southeast of Anaconda. Located near the slag piles on Mill Creek Highway, the plant is expected to open in 2018, according to one company official.

Rick Tabish, who heads FX Solutions Inc., the general contractor on the project, and who is also the former principal of Premier, says the Anaconda plant will eventually employ 700 people. Though that is not expected to happen right away.



An early outline of the slag processing plant that Premier Industries is building along Mill Creek Highway near Anaconda begins to take shape. General contractor FX Solutions Inc--owned by former Premier principal Rick Tabish--has been doing site preparation work at the site. Plans include a main plant of 60,100 square feet, along with a warehouse, office, maintenance shop, and parking lot with 142 parking stalls.

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The company has been doing site preparation in anticipation of building a 13-acre facility, where it plans to turn Anaconda's 56 million tons of slag into proppant. They've been moving dirt since this past summer.

Premier also expects to also extract pig iron and zinc oxide from the slag.

PILOT IN BUTTE

Tabish took The Montana Standard on a tour last week of the new pilot project.

The pilot in Butte will test a small-scale version of the proppant-making process using a 300-pound furnace. The full-scale version furnaces will be 10 tons, Tabish said.

The 300-pound furnace works using a process known as "disk atomization."

Tabish said the process works by heating the slag (made up of about 40 percent iron; 40 percent silica; manganese; and small amounts of arsenic, lead, and other materials) to about 3,000 degrees Fahrenheit using a coil that creates an electromagnetic field. The heated material is then flung by a rotating disk. The heat melts the slag, Tabish said, and the spinning disk causes materials to separate from the slag, including silica, which forms the proppant.



In this image taken from a drone last week is the future site of Premier Industries' slag processing plant near Anaconda. Rock is being crushed to later be used as fill.

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Tabish said lead and arsenic will not be released during the process and that the only emissions Premier is anticipating are in the form of carbon dioxide. A solid byproduct of the process will be zinc oxide, according to Tabish. Premier plans to sell that, too, creating three revenue streams. He described the procedure as a mostly “dry” process and said the facility won’t be a “smoke stack” operation.

Tabish said results from the pilot are being sent to Montana Tech, where they'll be analyzed at the "molecular level" for qualities important to the fracking industry, such as how much pressure the proppant is able to withstand; the consistency of its shape, which Tabish said is spherical; and its ability to flow and move.

The Butte project may be new, but Premier has been doing pilot testing for some time.

In January 2016, Tabish told the Standard that he had been working with Young and Montana Tech professor John Getty in developing and testing the process. The pilot was originally located in Menomonee Falls, Wisconsin, where it operated for about one year, and before that in Ukiah, California, for three to four months.

BEFORE PREMIER

Prior to his journey with Premier Industries, Tabish worked in the waste disposal side of the oil business in the Bakken with his company Basin Industrial Services.

"I had a pretty intimate knowledge of what happens in clean-outs and dealing with larger companies and watching how they frack and what they do, so I understood the importance of...proppant as well," Tabish said.



Fill operations are pictured here in this image of the future site of Premier Industries' slag processing plant, about 1.3 miles southwest of Montana Highway 1 along Mill Creek Highway.

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He first became interested in Anaconda slag after considering the possibility of extracting pig iron from it. He partnered with his cousin, Dan Tabish, who holds a degree in metallurgical engineering from the University of Washington, to research the feasibility of turning slag into iron, and the two soon learned about the disc atomization process.

“Dan is the architect behind the recipe,” Tabish said last week.

Proppant works in conjunction with high-pressure fluid to create fissures in underground rock. When the fluid bleeds off, proppant is left behind and holds the cracks in the rock wide enough to allow natural gas and oil to reach the surface. Currently, the most popular sources of proppant are naturally occurring frack sand, which is mined in Wisconsin and Texas, and proppant that is made synthetically from ceramics.

Tabish said what will make Premier's proppant unique is its "sphericity" -- the measure of how close an object is to a perfect sphere. According to Tabish, Premier's sphericity is around .96, or 96 percent in a visual scale known as the "Krumbein scale." What gives Premier's proppant its spherical shape, he said, is the disk atomization process.

"What's unique about this is we're taking a pile of waste and turning it into two products that are useful," added Dan Tabish.

Rick Tabish said the pilot project will continue even after the plant in Anaconda gets off the ground.

PERMIT REQUIREMENTS

Kristi Ponozzo, spokesperson with the Montana Department of Environmental Quality, said via email that Premier has not applied for its air quality permit yet. Through Tabish's consulting company, DEQ has issued a general stormwater permit for the building construction underway.

The company also does not have a public water or subdivision permit. DEQ is putting together a compliance assistance letter to address the potential for solid waste regulations that might affect the plant.



In this drone image of the future site of Premier Industries' slag processing plant, the town of Anaconda can be seen in the distance, about 4 miles northwest from the site. The Washoe smelter is pictured at top left, and to the right is the 56-million-ton slag heap that Premier hopes will one day bring 700 jobs to Anaconda.

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Ponozzo said it's not necessarily unusual for a company to begin construction without all of its DEQ permits in hand, but she said the agency does "encourage pre-application coordination meetings with applicants for projects that require DEQ permits, especially ones that require multiple DEQ permits."

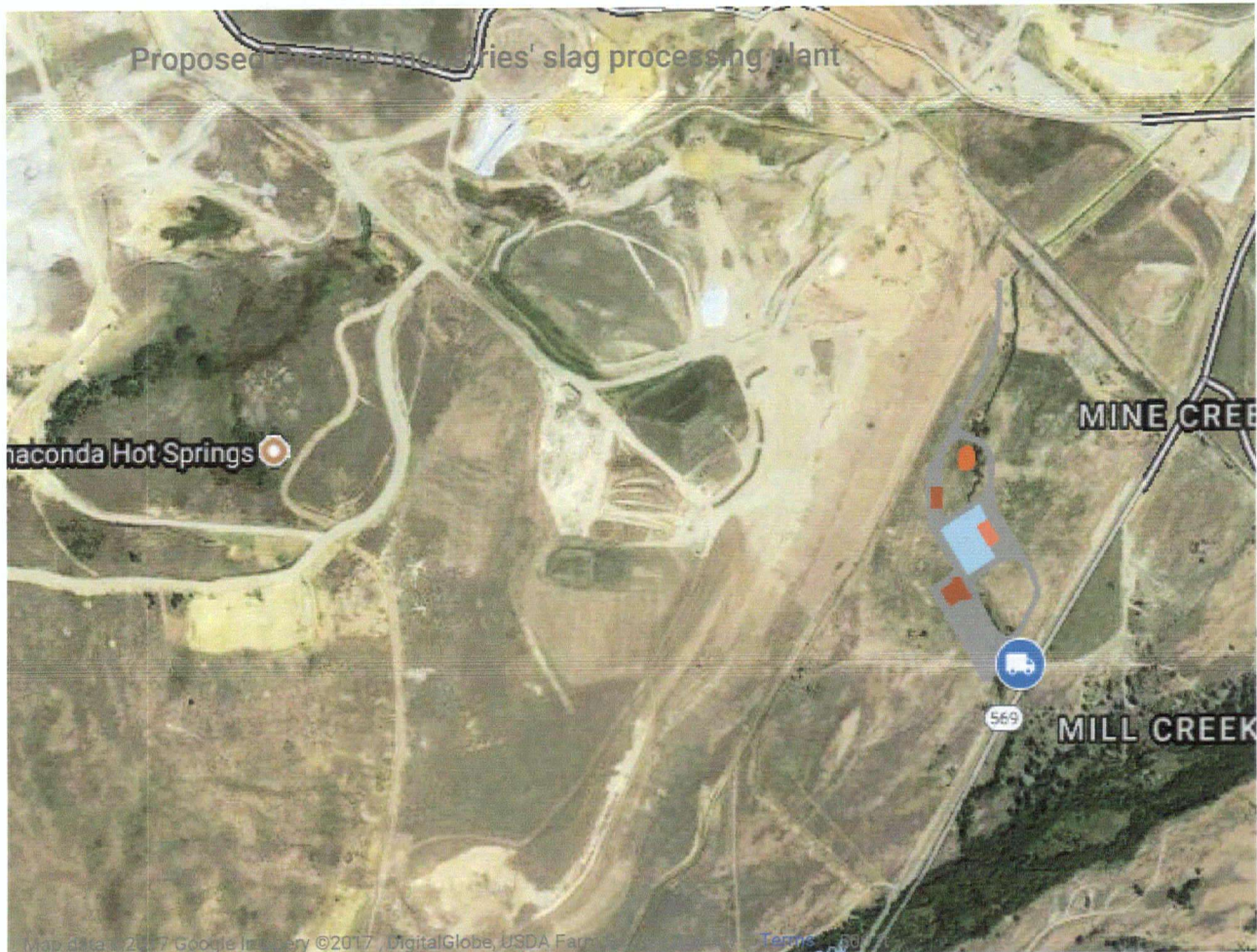
Tabish, meanwhile, told the Standard in October that observers of the project shouldn't use environmental permits as yardsticks for progress. He said Premier and FX Solutions don't need an industrial air quality permit to begin construction or complete site preparation work.

Despite the fact that the company doesn't have all its ducks in a row with DEQ yet, Anaconda-Deer Lodge County Chief Executive Bill Everett has nothing but glowing words to say about Premier and Tabish.

Everett said the company secured a building permit with the county last week

that cost \$19,000.

“We haven’t had a building permit like that before,” Everett said. “We’ve never had one half that amount before.”



Meeting Wednesday in Anaconda

Premier Industries LLC will host a public meeting at 6 p.m. Wednesday at the Metcalf Senior Citizen Center, 115 E. Pennsylvania Ave., in Anaconda to share progress on the facility.

Susan Dunlap

Environmental and Natural Resources Reporter for the Montana Standard.